

SEQUENCE LISTING

<110> Makielski, Jonathan C
Ye, Bin

<120> Sodium Channel Alpha Subunits

<130> 960296.98032

<140>
<141>

<160> 10

<170> PatentIn Ver. 2.1

<210> 1
<211> 6091
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (10)..(6054)

<400> 1
gatgagaag atg gca aac ttc cta tta cct cgg ggc acc agc agc ttc cgc 51
Met Ala Asn Phe Leu Leu Pro Arg Gly Thr Ser Ser Phe Arg
1 5 10

agg ttc aca cgg gag tcc ctg gca gcc atc gag aag cgc atg gcg gag 99
Arg Phe Thr Arg Glu Ser Leu Ala Ala Ile Glu Lys Arg Met Ala Glu
15 20 25 30

aag caa gcc cgc ggc tca acc acc ttg cag gag agc cga gag ggg ctg 147
Lys Gln Ala Arg Gly Ser Thr Thr Leu Gln Glu Ser Arg Glu Gly Leu
35 40 45

ccc gag gag gct ccc cgg ccc cag ctg gac ctg cag gcc tcc aaa 195
Pro Glu Glu Ala Pro Arg Pro Gln Leu Asp Leu Gln Ala Ser Lys
50 55 60

aag ctg cca gat ctc tat ggc aat cca ccc caa gag ctc atc gga gag 243
Lys Leu Pro Asp Leu Tyr Gly Asn Pro Pro Gln Glu Leu Ile Gly Glu
65 70 75

ccc ctg gag gac ctg gac ccc ttc tat agc acc caa aag act ttc atc 291
Pro Leu Glu Asp Leu Asp Pro Phe Tyr Ser Thr Gln Lys Thr Phe Ile
80 85 90

gta ctg aat aaa ggc aag acc atc ttc cgg ttc agt gcc acc aac gcc 339
Val Leu Asn Lys Gly Lys Thr Ile Phe Arg Phe Ser Ala Thr Asn Ala
95 100 105 110

ttg tat gtc ctc agt ccc ttc cac ccc atc cgg aga gcg gct gtg aag 387
Leu Tyr Val Leu Ser Pro Phe His Pro Ile Arg Arg Ala Ala Val Lys
115 120 125

att ctg gtt cac tcg ctc ttc aac atg ctc atc atg tgc acc atc ctc Ile Leu Val His Ser Leu Phe Asn Met Leu Ile Met Cys Thr Ile Leu 130 135 140	435
acc aac tgc gtg ttc atg gcc cag cac gac cct cca ccc tgg acc aag Thr Asn Cys Val Phe Met Ala Gln His Asp Pro Pro Pro Trp Thr Lys 145 150 155	483
tat gtc gag tac acc ttc acc gcc att tac acc ttt gag tct ctg gtc Tyr Val Glu Tyr Thr Phe Ala Ile Tyr Thr Phe Glu Ser Leu Val 160 165 170	531
aag att ctg gct cga ggc ttc tgc ctg cac gcg ttc act ttc ctt cgg Lys Ile Leu Ala Arg Gly Phe Cys Leu His Ala Phe Thr Phe Leu Arg 175 180 185 190	579
gac cca tgg aac tgg ctg gac ttt agt gtg att atc atg gca tac aca Asp Pro Trp Asn Trp Leu Asp Phe Ser Val Ile Ile Met Ala Tyr Thr 195 200 205	627
act gaa ttt gtg gac ctg ggc aat gtc tca gcc tta cgc acc ttc cga Thr Glu Phe Val Asp Leu Gly Asn Val Ser Ala Leu Arg Thr Phe Arg 210 215 220	675
gtc ctc cgg gcc ctg aaa act ata tca gtc att tca ggg ctg aag acc Val Leu Arg Ala Leu Lys Thr Ile Ser Val Ile Ser Gly Leu Lys Thr 225 230 235	723
atc gtg ggg gcc ctg atc cag tct gtg aag aag ctg gct gat gtg atg Ile Val Gly Ala Leu Ile Gln Ser Val Lys Lys Leu Ala Asp Val Met 240 245 250	771
gtc ctc aca gtc ttc tgc ctc agc gtc ttt gcc ctc atc ggc ctg cag Val Leu Thr Val Phe Cys Leu Ser Val Phe Ala Leu Ile Gly Leu Gln 255 260 265 270	819
ctc ttc atg ggc aac cta agg cac aag tgc gtg cgc aac ttc aca gcg Leu Phe Met Gly Asn Leu Arg His Lys Cys Val Arg Asn Phe Thr Ala 275 280 285	867
ctc aac ggc acc aac ggc tcc gtg gag gcc gac ggc ttg gtc tgg gaa Leu Asn Gly Thr Asn Gly Ser Val Glu Ala Asp Gly Leu Val Trp Glu 290 295 300	915
tcc ctg gac ctt tac ctc agt gat cca gaa aat tac ctg ctc aag aac Ser Leu Asp Leu Tyr Leu Ser Asp Pro Glu Asn Tyr Leu Leu Lys Asn 305 310 315	963
ggc acc tct gat gtg tta ctg tgt ggg aac agc tct gac gct ggg aca Gly Thr Ser Asp Val Leu Leu Cys Gly Asn Ser Ser Asp Ala Gly Thr 320 325 330	1011
tgt ccg gag ggc tac cgg tgc cta aag gca ggc gag aac ccc gac cac Cys Pro Glu Gly Tyr Arg Cys Leu Lys Ala Gly Glu Asn Pro Asp His 335 340 345 350	1059
ggc tac acc agc ttc gat tcc ttt gcc tgg gcc ttt ctt gca ctc ttc Gly Tyr Thr Ser Phe Asp Ser Phe Ala Trp Ala Phe Leu Ala Leu Phe 355 360 365	1107

cgc ctg atg acg cag gac tgc tgg gag cgc ctc tat cag cag acc ctc		1155
Arg Leu Met Thr Gln Asp Cys Trp Glu Arg Leu Tyr Gln Gln Thr Leu		
370	375	380
agg tcc gca ggg aag atc tac atg atc ttc ttc atg ctt gtc atc ttc		1203
Arg Ser Ala Gly Lys Ile Tyr Met Ile Phe Phe Met Leu Val Ile Phe		
385	390	395
ctg ggg tcc ttc tac ctg gtg aac ctg atc ctg gcc gtg gtc gca atg		1251
Leu Gly Ser Phe Tyr Leu Val Asn Leu Ile Leu Ala Val Val Ala Met		
400	405	410
gcc tat gag gag caa aac caa gcc acc atc gct gag acc gag gag aag		1299
Ala Tyr Glu Glu Gln Asn Ala Thr Ile Ala Glu Thr Glu Glu Lys		
415	420	425
430		
gaa aag cgc ttc cag gag gcc atg gaa atg ctc aag aaa gaa cac gag		1347
Glu Lys Arg Phe Gln Glu Ala Met Glu Met Leu Lys Lys Glu His Glu		
435	440	445
gcc ctc acc atc agg ggt gtg gat acc gtg tcc cgt agc tcc ttg gag		1395
Ala Leu Thr Ile Arg Gly Val Asp Thr Val Ser Arg Ser Ser Leu Glu		
450	455	460
atg tcc cct ttg gcc cca gta aac agc cat gag aga aga agc aag agg		1443
Met Ser Pro Leu Ala Pro Val Asn Ser His Glu Arg Arg Ser Lys Arg		
465	470	475
aga aaa cgg atg tct tca gga act gag gag tgt ggg gag gac agg ctc		1491
Arg Lys Arg Met Ser Ser Gly Thr Glu Glu Cys Gly Glu Asp Arg Leu		
480	485	490
ccc aag tct gac tca gaa gat ggt ccc aga gca atg aat cat ctc agc		1539
Pro Lys Ser Asp Ser Glu Asp Gly Pro Arg Ala Met Asn His Leu Ser		
495	500	505
510		
ctc acc cgt ggc ctc agc agg act tct atg aag cca cgt tcc agc cgc		1587
Leu Thr Arg Gly Leu Ser Arg Thr Ser Met Lys Pro Arg Ser Ser Arg		
515	520	525
ggg agc att ttc acc ttt cgc agg cga gac ctg ggt tct gaa gca gat		1635
Gly Ser Ile Phe Thr Phe Arg Arg Asp Leu Gly Ser Glu Ala Asp		
530	535	540
ttt gca gat gat gaa aac agc aca gcg ggg gag agc gag agc cac cgc		1683
Phe Ala Asp Asp Glu Asn Ser Thr Ala Gly Glu Ser Glu Ser His Arg		
545	550	555
aca tca ctg ctg gtg ccc tgg ccc ctg cgc cgg acc agt gcc cag gga		1731
Thr Ser Leu Leu Val Pro Trp Pro Leu Arg Arg Thr Ser Ala Gln Gly		
560	565	570
cag ccc agt ccc gga acc tcg gct cct ggc cac gcc ctc cat ggc aaa		1779
Gln Pro Ser Pro Gly Thr Ser Ala Pro Gly His Ala Leu His Gly Lys		
575	580	585
590		
aag aac agc act gtg gac tgc aat ggg gtg gtc tca tta ctg ggg gca		1827
Lys Asn Ser Thr Val Asp Cys Asn Gly Val Val Ser Leu Leu Gly Ala		
595	600	605

ggc gac cca gag gcc aca tcc cca gga agc cac atc ctc cgc cct gtg			1875
Gly Asp Pro Glu Ala Thr Ser Pro Gly Ser His Ile Leu Arg Pro Val			
610	615	620	
atg cta gag cac ccg cca gac acg acc acg cca tcg gag gag cca ggc			1923
Met Leu Glu His Pro Pro Asp Thr Thr Pro Ser Glu Glu Pro Gly			
625	630	635	
ggg ccc cag atg ctg acc tcc cag gct ccg tgt gta gat ggc ttc gag			1971
Gly Pro Gln Met Leu Thr Ser Gln Ala Pro Cys Val Asp Gly Phe Glu			
640	645	650	
gag cca gga gca cgg cag cgg gcc ctc agc gca gtc agc gtc ctc acc			2019
Glu Pro Gly Ala Arg Gln Arg Ala Leu Ser Ala Val Ser Val Leu Thr			
655	660	665	670
agc gca ctg gaa gag tta gag gag tct cgc cac aag tgt cca cca tgc			2067
Ser Ala Leu Glu Leu Glu Ser Arg His Lys Cys Pro Pro Cys			
675	680	685	
tgg aac cgt ctc gcc cag cgc tac ctg atc tgg gag tgc tgc ccg ctg			2115
Trp Asn Arg Leu Ala Gln Arg Tyr Leu Trp Glu Cys Cys Pro Leu			
690	695	700	
tgg atg tcc atc aag cag gga gtg aag ttg gtg gtc atg gac ccg ttt			2163
Trp Met Ser Ile Lys Gln Gly Val Lys Leu Val Val Met Asp Pro Phe			
705	710	715	
act gac ctc acc atc act atg tgc atc gta ctc aac aca ctc ttc atg			2211
Thr Asp Leu Thr Ile Thr Met Cys Ile Val Leu Asn Thr Leu Phe Met			
720	725	730	
gcg ctg gag cac tac aac atg aca agt gaa ttc gag gag atg ctg cag			2259
Ala Leu Glu His Tyr Asn Met Thr Ser Glu Phe Glu Glu Met Leu Gln			
735	740	745	750
gtc gga aac ctg gtc ttc aca ggg att ttc aca gca gag atg acc ttc			2307
Val Gly Asn Leu Val Phe Thr Gly Ile Phe Thr Ala Glu Met Thr Phe			
755	760	765	
aag atc att gcc ctc gac ccc tac tac tac ttc caa cag ggc tgg aac			2355
Lys Ile Ile Ala Leu Asp Pro Tyr Tyr Phe Gln Gln Gly Trp Asn			
770	775	780	
atc ttc gac agc atc atc gtc atc ctt agc ctc atg gag ctg ggc ctg			2403
Ile Phe Asp Ser Ile Ile Val Ile Leu Ser Leu Met Glu Leu Gly Leu			
785	790	795	
tcc cgc atg agc aac ttg tcg gtg ctg cgc tcc ttc cgc ctg ctg cgg			2451
Ser Arg Met Ser Asn Leu Ser Val Leu Arg Ser Phe Arg Leu Leu Arg			
800	805	810	
gtc ttc aag ctg gcc aaa tca tgg ccc acc ctg aac aca ctc atc aag			2499
Val Phe Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys			
815	820	825	830
atc atc ggg aac tca gtg ggg gca ctg ggg aac ctg aca ctg gtg cta			2547
Ile Ile Gly Asn Ser Val Gly Ala Leu Gly Asn Leu Thr Leu Val Leu			
835	840	845	

100% IDENTICAL

gcc atc atc gtg ttc atc ttt gct gtg ggc atg cag ctc ttt ggc Ala Ile Ile Val Phe Ile Phe Ala Val Val Gly Met Gln Leu Phe Gly 850 855 860	2595
aag aac tac tcg gag ctg agg gac agc gac tca ggc ctg ctg cct cgc Lys Asn Tyr Ser Glu Leu Arg Asp Ser Asp Ser Gly Leu Leu Pro Arg 865 870 875	2643
tgg cac atg atg gac ttc ttt cat gcc ttc ctc atc atc ttc cgc atc Trp His Met Met Asp Phe Phe His Ala Phe Leu Ile Ile Phe Arg Ile 880 885 890	2691
ctc tgt gga gag tgg atc gag acc atg tgg gac tgc atg gag gtg tcg Leu Cys Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ser 895 900 905 910	2739
ggg cag tca tta tgc ctg gtc ttc ttg ctt gtt atg gtc att ggc Gly Gln Ser Leu Cys Leu Leu Val Phe Leu Leu Val Met Val Ile Gly 915 920 925	2787
aac ctt gtg gtc ctg aat ctc ttc ctg gcc ttg ctg ctc agc tcc ttc Asn Leu Val Val Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe 930 935 940	2835
agt gca gac aac ctc aca gcc cct gat gag gac aga gag atg aac aac Ser Ala Asp Asn Leu Thr Ala Pro Asp Glu Asp Arg Glu Met Asn Asn 945 950 955	2883
ctc cag ctg gcc ctg gcc cgc atc cag agg ggc ctg cgc ttt gtc aag Leu Gln Leu Ala Leu Ala Arg Ile Gln Arg Gly Leu Arg Phe Val Lys 960 965 970	2931
cgg acc acc tgg gat ttc tgc tgt ggt ctc ctg cgg cag cgg cct cag Arg Thr Thr Trp Asp Phe Cys Cys Gly Leu Leu Arg Gln Arg Pro Gln 975 980 985 990	2979
aag ccc gca gcc ctt gcc gcc cag ggc cag ctg ccc agc tgc att gcc Lys Pro Ala Ala Leu Ala Gln Gly Gln Leu Pro Ser Cys Ile Ala 995 1000 1005	3027
acc ccc tac tcc ccg cca ccc cca gag acg gag aag gtg cct ccc acc Thr Pro Tyr Ser Pro Pro Pro Glu Thr Glu Lys Val Pro Pro Thr 1010 1015 1020	3075
cgc aag gaa aca cgg ttt gag gaa ggc gag caa cca ggc cag ggc acc Arg Lys Glu Thr Arg Phe Glu Glu Gly Glu Gln Pro Gly Gln Gly Thr 1025 1030 1035	3123
ccc ggg gat cca gag ccc gtg tgt gtg ccc atc gct gtg gcc gag tca Pro Gly Asp Pro Glu Pro Val Cys Val Pro Ile Ala Val Ala Glu Ser 1040 1045 1050	3171
gac aca gat gac caa gaa gaa gat gag gag aac agc ctg ggc acg gag Asp Thr Asp Asp Gln Glu Glu Asp Glu Glu Asn Ser Leu Gly Thr Glu 1055 1060 1065 1070	3219
gag gag tcc agc aag cag gaa tcc cag cct gtg tcc ggt ggc cca gag Glu Glu Ser Ser Lys Gln Glu Ser Gln Pro Val Ser Gly Gly Pro Glu 1075 1080 1085	3267

gcc cct ccg gat tcc agg acc tgg agc cag gtg tca gcg act gcc tcc Ala Pro Pro Asp Ser Arg Thr Trp Ser Gln Val Ser Ala Thr Ala Ser 1090 1095 1100	3315
tct gag gcc gag gcc agt gca tct cag gcc gac tgg cgg cag cag tgg Ser Glu Ala Glu Ala Ser Ala Ser Gln Ala Asp Trp Arg Gln Gln Trp 1105 1110 1115	3363
aaa gcg gaa ccc cag gcc cca ggg tgc ggt gag acc cca gag gac agt Lys Ala Glu Pro Gln Ala Pro Gly Cys Gly Glu Thr Pro Glu Asp Ser 1120 1125 1130	3411
tgc tcc gag ggc agc aca gca gac atg acc aac acc gct gag ctc ctg Cys Ser Glu Gly Ser Thr Ala Asp Met Thr Asn Thr Ala Glu Leu Leu 1135 1140 1145 1150	3459
gag cag atc cct gac ctc ggc cag gat gtc aag gac cca gag gac tgc Glu Gln Ile Pro Asp Leu Gly Gln Asp Val Lys Asp Pro Glu Asp Cys 1155 1160 1165	3507
ttc act gaa ggc tgt gtc cgg cgc tgt ccc tgc tgt gcg gtg gac acc Phe Thr Glu Gly Cys Val Arg Arg Cys Pro Cys Cys Ala Val Asp Thr 1170 1175 1180	3555
aca cag gcc cca ggg aag gtc tgg tgg cgg ttg cgc aag acc tgc tac Thr Gln Ala Pro Gly Lys Val Trp Trp Arg Leu Arg Lys Thr Cys Tyr 1185 1190 1195	3603
cac atc gtg gag cac agc tgg ttc gag aca ttc atc atc ttc atg atc His Ile Val Glu His Ser Trp Phe Glu Thr Phe Ile Ile Phe Met Ile 1200 1205 1210	3651
cta ctc agc agt gga gcg ctg gcc ttc gag gac atc tac cta gag gag Leu Leu Ser Ser Gly Ala Leu Ala Phe Glu Asp Ile Tyr Leu Glu Glu 1215 1220 1225 1230	3699
cgg aag acc atc aag gtt ctg ctt gag tat gcc gac aag atg ttc aca Arg Lys Thr Ile Lys Val Leu Leu Glu Tyr Ala Asp Lys Met Phe Thr 1235 1240 1245	3747
tat gtc ttc gtg ctg gag atg ctg ctc aag tgg gtg gcc tac ggc ttc Tyr Val Phe Val Leu Glu Met Leu Leu Lys Trp Val Ala Tyr Gly Phe 1250 1255 1260	3795
aag aag tac ttc acc aat gcc tgg tgc tgg ctc gac ttc ctc atc gta Lys Lys Tyr Phe Thr Asn Ala Trp Cys Trp Leu Asp Phe Leu Ile Val 1265 1270 1275	3843
gac gtc tct ctg gtc agc ctg gtg gcc aac acc ctg ggc ttt gcc gag Asp Val Ser Leu Val Ser Leu Val Ala Asn Thr Leu Gly Phe Ala Glu 1280 1285 1290	3891
atg ggc ccc atc aag tca ctg cgg acg ctg cgt gca ctc cgt cct ctg Met Gly Pro Ile Lys Ser Leu Arg Thr Leu Arg Ala Leu Arg Pro Leu 1295 1300 1305 1310	3939
aga gct ctg tca cga ttt gag ggc atg agg gtg gtg gtc aat gcc ctg Arg Ala Leu Ser Arg Phe Glu Gly Met Arg Val Val Val Asn Ala Leu 1315 1320 1325	3987

gtg ggc gcc atc ccg tcc atc atg aac gtc ctc ctc gtc tgc ctc atc Val Gly Ala Ile Pro Ser Ile Met Asn Val Leu Leu Val Val Cys Leu Ile 1330 1335 1340	4035
ttc tgg ctc atc ttc agc atc atg ggc gtg aac ctc ttt gcg ggg aag Phe Trp Leu Ile Phe Ser Ile Met Gly Val Asn Leu Phe Ala Gly Lys 1345 1350 1355	4083
ttt ggg agg tgc atc aac cag aca gag gga gac ttg cct ttg aac tac Phe Gly Arg Cys Ile Asn Gln Thr Glu Gly Asp Leu Pro Leu Asn Tyr 1360 1365 1370	4131
acc atc gtg aac aac aag agc cag tgt gag tcc ttg aac ttg acc gga Thr Ile Val Asn Asn Lys Ser Gln Cys Glu Ser Leu Asn Leu Thr Gly 1375 1380 1385 1390	4179
gaa ttg tac tgg acc aag gtg aaa gtc aac ttt gac aac gtg ggg gcc Glu Leu Tyr Trp Thr Lys Val Lys Val Asn Phe Asp Asn Val Gly Ala 1395 1400 1405	4227
ggg tac ctg gcc ctt ctg cag gtg gca aca ttt aaa ggc tgg atg gac Gly Tyr Leu Ala Leu Leu Gln Val Ala Thr Phe Lys Gly Trp Met Asp 1410 1415 1420	4275
att atg tat gca gct gtg gac tcc agg ggg tat gaa gag cag cct cag Ile Met Tyr Ala Ala Val Asp Ser Arg Gly Tyr Glu Glu Gln Pro Gln 1425 1430 1435	4323
tgg gaa tac aac ctc tac atg tac atc tat ttt gtc att ttc atc atc Trp Glu Tyr Asn Leu Tyr Met Tyr Ile Tyr Phe Val Ile Phe Ile Ile 1440 1445 1450	4371
ttt ggg tct ttc acc ctg aac ctc ttt att ggt gtc atc att gac Phe Gly Ser Phe Phe Thr Leu Asn Leu Phe Ile Gly Val Ile Ile Asp 1455 1460 1465 1470	4419
aac ttc aac caa cag aag aaa aag tta ggg ggc cag gac atc ttc atg Asn Phe Asn Gln Gln Lys Lys Leu Gly Gly Gln Asp Ile Phe Met 1475 1480 1485	4467
aca gag gag cag aag aag tac tac aat gcc atg aag aag ctg ggc tcc Thr Glu Glu Gln Lys Lys Tyr Tyr Asn Ala Met Lys Lys Leu Gly Ser 1490 1495 1500	4515
aag aag ccc cag aag ccc atc cca cgcccccctg aac aag tac cag ggc Lys Lys Pro Gln Lys Pro Ile Pro Arg Pro Leu Asn Lys Tyr Gln Gly 1505 1510 1515	4563
ttc ata ttc gac att gtg acc aag cag gcc ttt gac gtc acc atc atg Phe Ile Phe Asp Ile Val Thr Lys Gln Ala Phe Asp Val Thr Ile Met 1520 1525 1530	4611
ttt ctg atc tgc ttg aat atg gtg acc atg atg gtg gag aca gat gac Phe Leu Ile Cys Leu Asn Met Val Thr Met Met Val Glu Thr Asp Asp 1535 1540 1545 1550	4659
caa agt cct gag aaa atc aac atc ttg gcc aag atc aac ctg ctc ttt Gln Ser Pro Glu Lys Ile Asn Ile Leu Ala Lys Ile Asn Leu Leu Phe 1555 1560 1565	4707

gtg gcc atc ttc aca ggc gag tgt att gtc aag ctg gct gcc ctg cgc Val Ala Ile Phe Thr Gly Glu Cys Ile Val Lys Leu Ala Ala Leu Arg	4755
1570 1575 1580	
cac tac tac ttc acc aac agc tgg aat atc ttc gac ttc gtg gtt gtc His Tyr Tyr Phe Thr Asn Ser Trp Asn Ile Phe Asp Phe Val Val Val	4803
1585 1590 1595	
atc ctc tcc atc gtg ggc act gtg ctc tcg gac atc atc cag aag tac Ile Leu Ser Ile Val Gly Thr Val Leu Ser Asp Ile Ile Gln Lys Tyr	4851
1600 1605 1610	
ttc ttc tcc ccg acg ctc ttc cga gtc atc cgc ctg gcc cga ata ggc Phe Phe Ser Pro Thr Leu Phe Arg Val Ile Arg Leu Ala Arg Ile Gly	4899
1615 1620 1625 1630	
cgc atc ctc aga ctg atc cga ggg gcc aag ggg atc cgc acg ctg ctc Arg Ile Leu Arg Leu Ile Arg Gly Ala Lys Gly Ile Arg Thr Leu Leu	4947
1635 1640 1645	
ttt gcc ctc atg atg tcc ctg cct gcc ctc ttc aac atc ggg ctg ctg Phe Ala Leu Met Met Ser Leu Pro Ala Leu Phe Asn Ile Gly Leu Leu	4995
1650 1655 1660	
ctc ttc ctc gtc atg ttc atc tac tcc atc ttt ggc atg gcc aac ttc Leu Phe Leu Val Met Phe Ile Tyr Ser Ile Phe Gly Met Ala Asn Phe	5043
1665 1670 1675	
gct tat gtc aag tgg gag gct ggc atc gac gac atg ttc aac ttc cag Ala Tyr Val Lys Trp Glu Ala Gly Ile Asp Asp Met Phe Asn Phe Gln	5091
1680 1685 1690	
acc ttc gcc aac agc atg ctg tgc ctc ttc cag atc acc acg tcg gcc Thr Phe Ala Asn Ser Met Leu Cys Leu Phe Gln Ile Thr Thr Ser Ala	5139
1695 1700 1705 1710	
ggc tgg gat ggc ctc ctc agc ccc atc ctc aac act ggg ccg ccc tac Gly Trp Asp Gly Leu Leu Ser Pro Ile Leu Asn Thr Gly Pro Pro Tyr	5187
1715 1720 1725	
tgc gac ccc act ctg ccc aac agc aat ggc tct cgg ggg gac tgc ggg Cys Asp Pro Thr Leu Pro Asn Ser Asn Gly Ser Arg Gly Asp Cys Gly	5235
1730 1735 1740	
agc cca gcc gtg ggc atc ctc ttc acc acc tac atc atc atc tcc Ser Pro Ala Val Gly Ile Leu Phe Phe Thr Thr Tyr Ile Ile Ile Ser	5283
1745 1750 1755	
ttc ctc atc gtg gtc aac atg tac att gcc atc atc ctg gag aac ttc Phe Leu Ile Val Val Asn Met Tyr Ile Ala Ile Ile Leu Glu Asn Phe	5331
1760 1765 1770	
agc gtg gcc acg gag gag agc acc gag ccc ctg agt gag gac gac ttc Ser Val Ala Thr Glu Glu Ser Thr Glu Pro Leu Ser Glu Asp Asp Phe	5379
1775 1780 1785 1790	
gat atg ttc tat gag atc tgg gag aaa ttt gac cca gag gcc act cag Asp Met Phe Tyr Glu Ile Trp Glu Lys Phe Asp Pro Glu Ala Thr Gln	5427
1795 1800 1805	

ttt att gag tat tcg gtc ctg tct gac ttt gcc gat gcc ctg tct gag 5475
 Phe Ile Glu Tyr Ser Val Leu Ser Asp Phe Ala Asp Ala Leu Ser Glu
 1810 1815 1820

 cca ctc cgt atc gcc aag ccc aac cag ata agc ctc atc aac atg gac 5523
 Pro Leu Arg Ile Ala Lys Pro Asn Gln Ile Ser Leu Ile Asn Met Asp
 1825 1830 1835

 ctg ccc atg gtg agt ggg gac cgc atc cat tgc atg gac att ctc ttt 5571
 Leu Pro Met Val Ser Gly Asp Arg Ile His Cys Met Asp Ile Leu Phe
 1840 1845 1850

 gcc ttc acc aaa agg gtc ctg ggg gag tct ggg gag atg gac gcc ctg 5619
 Ala Phe Thr Lys Arg Val Leu Gly Glu Ser Gly Glu Met Asp Ala Leu
 1855 1860 1865 1870

 aag atc cag atg gag gag aag ttc atg gca gcc aac cca tcc aag atc 5667
 Lys Ile Gln Met Glu Glu Lys Phe Met Ala Ala Asn Pro Ser Lys Ile
 1875 1880 1885

 tcc tac gag ccc atc acc acc aca ctc cgg cgc aag cac gaa gag gtg 5715
 Ser Tyr Glu Pro Ile Thr Thr Leu Arg Arg Lys His Glu Glu Val
 1890 1895 1900

 tcg gcc atg gtt atc cag aga gcc ttc cgc agg cac ctg ctg caa cgc 5763
 Ser Ala Met Val Ile Gln Arg Ala Phe Arg Arg His Leu Leu Gln Arg
 1905 1910 1915

 tct ttg aag cat gcc tcc ttc ctc cgt cag cag gcg ggc agc ggc 5811
 Ser Leu Lys His Ala Ser Phe Leu Phe Arg Gln Gln Ala Gly Ser Gly
 1920 1925 1930

 ctc tcc gaa gag gat gcc cct gag cga gag ggc ctc atc gcc tac gtg 5859
 Leu Ser Glu Glu Asp Ala Pro Glu Arg Glu Leu Ile Ala Tyr Val
 1935 1940 1945 1950

 atg agt gag aac ttc tcc cga ccc ctt ggc cca ccc tcc agc tcc tcc 5907
 Met Ser Glu Asn Phe Ser Arg Pro Leu Gly Pro Pro Ser Ser Ser
 1955 1960 1965

 atc tcc tcc act tcc ttc cca ccc tcc tat gac agt gtc act aga gcc 5955
 Ile Ser Ser Thr Ser Phe Pro Pro Ser Tyr Asp Ser Val Thr Arg Ala
 1970 1975 1980

 acc agc gat aac ctc cag gtg cgg ggg tct gac tac agc cac agt gaa 6003
 Thr Ser Asp Asn Leu Gln Val Arg Gly Ser Asp Tyr Ser His Ser Glu
 1985 1990 1995

 gat ctc gcc gac ttc ccc cct tct ccg gac agg gac cgt gag tcc atc 6051
 Asp Leu Ala Asp Phe Pro Pro Ser Pro Asp Arg Asp Arg Glu Ser Ile
 2000 2005 2010

 tg₂ tg₃ tg₄ tg₅ tg₆ tg₇ tg₈ tg₉ tg₁₀ tg₁₁ tg₁₂ tg₁₃ tg₁₄ tg₁₅ tg₁₆ tg₁₇ tg₁₈ tg₁₉ tg₂₀ tg₂₁ tg₂₂ tg₂₃ tg₂₄ tg₂₅ tg₂₆ tg₂₇ tg₂₈ tg₂₉ tg₃₀ tg₃₁ tg₃₂ tg₃₃ tg₃₄ tg₃₅ tg₃₆ tg₃₇ tg₃₈ tg₃₉ tg₄₀ tg₄₁ tg₄₂ tg₄₃ tg₄₄ tg₄₅ tg₄₆ tg₄₇ tg₄₈ tg₄₉ tg₅₀ tg₅₁ tg₅₂ tg₅₃ tg₅₄ tg₅₅ tg₅₆ tg₅₇ tg₅₈ tg₅₉ tg₆₀ tg₆₁ tg₆₂ tg₆₃ tg₆₄ tg₆₅ tg₆₆ tg₆₇ tg₆₈ tg₆₉ tg₇₀ tg₇₁ tg₇₂ tg₇₃ tg₇₄ tg₇₅ tg₇₆ tg₇₇ tg₇₈ tg₇₉ tg₈₀ tg₈₁ tg₈₂ tg₈₃ tg₈₄ tg₈₅ tg₈₆ tg₈₇ tg₈₈ tg₈₉ tg₉₀ tg₉₁ tg₉₂ tg₉₃ tg₉₄ tg₉₅ tg₉₆ tg₉₇ tg₉₈ tg₉₉ tg₁₀₀
 Val
 2015

 <210> 2
 <211> 2015
 <212> PRT
 <213> Homo sapiens

<400> 2
 Met Ala Asn Phe Leu Leu Pro Arg Gly Thr Ser Ser Phe Arg Arg Phe
 1 5 10 15
 Thr Arg Glu Ser Leu Ala Ala Ile Glu Lys Arg Met Ala Glu Lys Gln
 20 25 30
 Ala Arg Gly Ser Thr Thr Leu Gln Glu Ser Arg Glu Gly Leu Pro Glu
 35 40 45
 Glu Glu Ala Pro Arg Pro Gln Leu Asp Leu Gln Ala Ser Lys Lys Leu
 50 55 60
 Pro Asp Leu Tyr Gly Asn Pro Pro Gln Glu Leu Ile Gly Glu Pro Leu
 65 70 75 80
 Glu Asp Leu Asp Pro Phe Tyr Ser Thr Gln Lys Thr Phe Ile Val Leu
 85 90 95
 Asn Lys Gly Lys Thr Ile Phe Arg Phe Ser Ala Thr Asn Ala Leu Tyr
 100 105 110
 Val Leu Ser Pro Phe His Pro Ile Arg Arg Ala Ala Val Lys Ile Leu
 115 120 125
 Val His Ser Leu Phe Asn Met Leu Ile Met Cys Thr Ile Leu Thr Asn
 130 135 140
 Cys Val Phe Met Ala Gln His Asp Pro Pro Trp Thr Lys Tyr Val
 145 150 155 160
 Glu Tyr Thr Phe Thr Ala Ile Tyr Thr Phe Glu Ser Leu Val Lys Ile
 165 170 175
 Leu Ala Arg Gly Phe Cys Leu His Ala Phe Thr Phe Leu Arg Asp Pro
 180 185 190
 Trp Asn Trp Leu Asp Phe Ser Val Ile Ile Met Ala Tyr Thr Thr Glu
 195 200 205
 Phe Val Asp Leu Gly Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu
 210 215 220
 Arg Ala Leu Lys Thr Ile Ser Val Ile Ser Gly Leu Lys Thr Ile Val
 225 230 235 240
 Gly Ala Leu Ile Gln Ser Val Lys Lys Leu Ala Asp Val Met Val Leu
 245 250 255
 Thr Val Phe Cys Leu Ser Val Phe Ala Leu Ile Gly Leu Gln Leu Phe
 260 265 270
 Met Gly Asn Leu Arg His Lys Cys Val Arg Asn Phe Thr Ala Leu Asn
 275 280 285
 Gly Thr Asn Gly Ser Val Glu Ala Asp Gly Leu Val Trp Glu Ser Leu
 290 295 300

Asp Leu Tyr Leu Ser Asp Pro Glu Asn Tyr Leu Leu Lys Asn Gly Thr
 305 310 315 320
 Ser Asp Val Leu Leu Cys Gly Asn Ser Ser Asp Ala Gly Thr Cys Pro
 325 330 335
 Glu Gly Tyr Arg Cys Leu Lys Ala Gly Glu Asn Pro Asp His Gly Tyr
 340 345 350
 Thr Ser Phe Asp Ser Phe Ala Trp Ala Phe Leu Ala Leu Phe Arg Leu
 355 360 365
 Met Thr Gln Asp Cys Trp Glu Arg Leu Tyr Gln Gln Thr Leu Arg Ser
 370 375 380
 Ala Gly Lys Ile Tyr Met Ile Phe Phe Met Leu Val Ile Phe Leu Gly
 385 390 395 400
 Ser Phe Tyr Leu Val Asn Leu Ile Leu Ala Val Val Ala Met Ala Tyr
 405 410 415
 Glu Glu Gln Asn Gln Ala Thr Ile Ala Glu Thr Glu Glu Lys Glu Lys
 420 425 430
 Arg Phe Gln Glu Ala Met Glu Met Leu Lys Lys Glu His Glu Ala Leu
 435 440 445
 Thr Ile Arg Gly Val Asp Thr Val Ser Arg Ser Ser Leu Glu Met Ser
 450 455 460
 Pro Leu Ala Pro Val Asn Ser His Glu Arg Arg Ser Lys Arg Arg Lys
 465 470 475 480
 Arg Met Ser Ser Gly Thr Glu Glu Cys Gly Glu Asp Arg Leu Pro Lys
 485 490 495
 Ser Asp Ser Glu Asp Gly Pro Arg Ala Met Asn His Leu Ser Leu Thr
 500 505 510
 Arg Gly Leu Ser Arg Thr Ser Met Lys Pro Arg Ser Ser Arg Gly Ser
 515 520 525
 Ile Phe Thr Phe Arg Arg Arg Asp Leu Gly Ser Glu Ala Asp Phe Ala
 530 535 540
 Asp Asp Glu Asn Ser Thr Ala Gly Glu Ser Glu Ser His Arg Thr Ser
 545 550 555 560
 Leu Leu Val Pro Trp Pro Leu Arg Arg Thr Ser Ala Gln Gly Gln Pro
 565 570 575
 Ser Pro Gly Thr Ser Ala Pro Gly His Ala Leu His Gly Lys Lys Asn
 580 585 590
 Ser Thr Val Asp Cys Asn Gly Val Val Ser Leu Leu Gly Ala Gly Asp
 595 600 605
 Pro Glu Ala Thr Ser Pro Gly Ser His Ile Leu Arg Pro Val Met Leu
 610 615 620

Glu His Pro Pro Asp Thr Thr Pro Ser Glu Glu Pro Gly Gly Pro
 625 630 635 640
 Gln Met Leu Thr Ser Gln Ala Pro Cys Val Asp Gly Phe Glu Glu Pro
 645 650 655
 Gly Ala Arg Gln Arg Ala Leu Ser Ala Val Ser Val Leu Thr Ser Ala
 660 665 670
 Leu Glu Glu Leu Glu Glu Ser Arg His Lys Cys Pro Pro Cys Trp Asn
 675 680 685
 Arg Leu Ala Gln Arg Tyr Leu Ile Trp Glu Cys Cys Pro Leu Trp Met
 690 695 700
 Ser Ile Lys Gln Gly Val Lys Leu Val Val Met Asp Pro Phe Thr Asp
 705 710 715 720
 Leu Thr Ile Thr Met Cys Ile Val Leu Asn Thr Leu Phe Met Ala Leu
 725 730 735
 Glu His Tyr Asn Met Thr Ser Glu Phe Glu Glu Met Leu Gln Val Gly
 740 745 750
 Asn Leu Val Phe Thr Gly Ile Phe Thr Ala Glu Met Thr Phe Lys Ile
 755 760 765
 Ile Ala Leu Asp Pro Tyr Tyr Phe Gln Gln Gly Trp Asn Ile Phe
 770 775 780
 Asp Ser Ile Ile Val Ile Leu Ser Leu Met Glu Leu Gly Leu Ser Arg
 785 790 795 800
 Met Ser Asn Leu Ser Val Leu Arg Ser Phe Arg Leu Leu Arg Val Phe
 805 810 815
 Lys Leu Ala Lys Ser Trp Pro Thr Leu Asn Thr Leu Ile Lys Ile Ile
 820 825 830
 Gly Asn Ser Val Gly Ala Leu Gly Asn Leu Thr Leu Val Leu Ala Ile
 835 840 845
 Ile Val Phe Ile Phe Ala Val Val Gly Met Gln Leu Phe Gly Lys Asn
 850 855 860
 Tyr Ser Glu Leu Arg Asp Ser Asp Ser Gly Leu Leu Pro Arg Trp His
 865 870 875 880
 Met Met Asp Phe Phe His Ala Phe Leu Ile Ile Phe Arg Ile Leu Cys
 885 890 895
 Gly Glu Trp Ile Glu Thr Met Trp Asp Cys Met Glu Val Ser Gly Gln
 900 905 910
 Ser Leu Cys Leu Leu Val Phe Leu Leu Val Met Val Ile Gly Asn Leu
 915 920 925
 Val Val Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe Ser Ala
 930 935 940

Asp Asn Leu Thr Ala Pro Asp Glu Asp Arg Glu Met Asn Asn Leu Gln
945 950 955 960

Leu Ala Leu Ala Arg Ile Gln Arg Gly Leu Arg Phe Val Lys Arg Thr
965 970 975

Thr Trp Asp Phe Cys Cys Gly Leu Leu Arg Gln Arg Pro Gln Lys Pro
980 985 990

Ala Ala Leu Ala Ala Gln Gly Gln Leu Pro Ser Cys Ile Ala Thr Pro
995 1000 1005

Tyr Ser Pro Pro Pro Pro Glu Thr Glu Lys Val Pro Pro Thr Arg Lys
1010 1015 1020

Glu Thr Arg Phe Glu Glu Gly Glu Gln Pro Gly Gln Gly Thr Pro Gly
1025 1030 1035 1040

Asp Pro Glu Pro Val Cys Val Pro Ile Ala Val Ala Glu Ser Asp Thr
1045 1050 1055

Asp Asp Gln Glu Glu Asp Glu Glu Asn Ser Leu Gly Thr Glu Glu Glu
1060 1065 1070

Ser Ser Lys Gln Glu Ser Gln Pro Val Ser Gly Gly Pro Glu Ala Pro
1075 1080 1085

Pro Asp Ser Arg Thr Trp Ser Gln Val Ser Ala Thr Ala Ser Ser Glu
1090 1095 1100

Ala Glu Ala Ser Ala Ser Gln Ala Asp Trp Arg Gln Gln Trp Lys Ala
1105 1110 1115 1120

Glu Pro Gln Ala Pro Gly Cys Gly Glu Thr Pro Glu Asp Ser Cys Ser
1125 1130 1135

Glu Gly Ser Thr Ala Asp Met Thr Asn Thr Ala Glu Leu Leu Glu Gln
1140 1145 1150

Ile Pro Asp Leu Gly Gln Asp Val Lys Asp Pro Glu Asp Cys Phe Thr
1155 1160 1165

Glu Gly Cys Val Arg Arg Cys Pro Cys Cys Ala Val Asp Thr Thr Gln
1170 1175 1180

Ala Pro Gly Lys Val Trp Trp Arg Leu Arg Lys Thr Cys Tyr His Ile
1185 1190 1195 1200

Val Glu His Ser Trp Phe Glu Thr Phe Ile Ile Phe Met Ile Leu Leu
1205 1210 1215

Ser Ser Gly Ala Leu Ala Phe Glu Asp Ile Tyr Leu Glu Glu Arg Lys
1220 1225 1230

Thr Ile Lys Val Leu Leu Glu Tyr Ala Asp Lys Met Phe Thr Tyr Val
1235 1240 1245

Phe Val Leu Glu Met Leu Leu Lys Trp Val Ala Tyr Gly Phe Lys Lys
1250 1255 1260

Tyr Phe Thr Asn Ala Trp Cys Trp Leu Asp Phe Leu Ile Val Asp Val
 1265 1270 1275 1280
 Ser Leu Val Ser Leu Val Ala Asn Thr Leu Gly Phe Ala Glu Met Gly
 1285 1290 1295
 Pro Ile Lys Ser Leu Arg Thr Leu Arg Ala Leu Arg Pro Leu Arg Ala
 1300 1305 1310
 Leu Ser Arg Phe Glu Gly Met Arg Val Val Val Asn Ala Leu Val Gly
 1315 1320 1325
 Ala Ile Pro Ser Ile Met Asn Val Leu Leu Val Cys Leu Ile Phe Trp
 1330 1335 1340
 Leu Ile Phe Ser Ile Met Gly Val Asn Leu Phe Ala Gly Lys Phe Gly
 1345 1350 1355 1360
 Arg Cys Ile Asn Gln Thr Glu Gly Asp Leu Pro Leu Asn Tyr Thr Ile
 1365 1370 1375
 Val Asn Asn Lys Ser Gln Cys Glu Ser Leu Asn Leu Thr Gly Glu Leu
 1380 1385 1390
 Tyr Trp Thr Lys Val Lys Val Asn Phe Asp Asn Val Gly Ala Gly Tyr
 1395 1400 1405
 Leu Ala Leu Leu Gln Val Ala Thr Phe Lys Gly Trp Met Asp Ile Met
 1410 1415 1420
 Tyr Ala Ala Val Asp Ser Arg Gly Tyr Glu Glu Gln Pro Gln Trp Glu
 1425 1430 1435 1440
 Tyr Asn Leu Tyr Met Tyr Ile Tyr Phe Val Ile Phe Ile Ile Phe Gly
 1445 1450 1455
 Ser Phe Phe Thr Leu Asn Leu Phe Ile Gly Val Ile Ile Asp Asn Phe
 1460 1465 1470
 Asn Gln Gln Lys Lys Leu Gly Gly Gln Asp Ile Phe Met Thr Glu
 1475 1480 1485
 Glu Gln Lys Lys Tyr Tyr Asn Ala Met Lys Lys Leu Gly Ser Lys Lys
 1490 1495 1500
 Pro Gln Lys Pro Ile Pro Arg Pro Leu Asn Lys Tyr Gln Gly Phe Ile
 1505 1510 1515 1520
 Phe Asp Ile Val Thr Lys Gln Ala Phe Asp Val Thr Ile Met Phe Leu
 1525 1530 1535
 Ile Cys Leu Asn Met Val Thr Met Met Val Glu Thr Asp Asp Gln Ser
 1540 1545 1550
 Pro Glu Lys Ile Asn Ile Leu Ala Lys Ile Asn Leu Leu Phe Val Ala
 1555 1560 1565
 Ile Phe Thr Gly Glu Cys Ile Val Lys Leu Ala Ala Leu Arg His Tyr
 1570 1575 1580

Tyr Phe Thr Asn Ser Trp Asn Ile Phe Asp Phe Val Val Val Val Ile Leu
1585 1590 1595 1600

Ser Ile Val Gly Thr Val Leu Ser Asp Ile Ile Gln Lys Tyr Phe Phe
1605 1610 1615

Ser Pro Thr Leu Phe Arg Val Ile Arg Leu Ala Arg Ile Gly Arg Ile
1620 1625 1630

Leu Arg Leu Ile Arg Gly Ala Lys Gly Ile Arg Thr Leu Leu Phe Ala
1635 1640 1645

Leu Met Met Ser Leu Pro Ala Leu Phe Asn Ile Gly Leu Leu Leu Phe
1650 1655 1660

Leu Val Met Phe Ile Tyr Ser Ile Phe Gly Met Ala Asn Phe Ala Tyr
1665 1670 1675 1680

Val Lys Trp Glu Ala Gly Ile Asp Asp Met Phe Asn Phe Gln Thr Phe
1685 1690 1695

Ala Asn Ser Met Leu Cys Leu Phe Gln Ile Thr Thr Ser Ala Gly Trp
1700 1705 1710

Asp Gly Leu Leu Ser Pro Ile Leu Asn Thr Gly Pro Pro Tyr Cys Asp
1715 1720 1725

Pro Thr Leu Pro Asn Ser Asn Gly Ser Arg Gly Asp Cys Gly Ser Pro
1730 1735 1740

Ala Val Gly Ile Leu Phe Phe Thr Thr Tyr Ile Ile Ile Ser Phe Leu
1745 1750 1755 1760

Ile Val Val Asn Met Tyr Ile Ala Ile Ile Leu Glu Asn Phe Ser Val
1765 1770 1775

Ala Thr Glu Glu Ser Thr Glu Pro Leu Ser Glu Asp Asp Phe Asp Met
1780 1785 1790

Phe Tyr Glu Ile Trp Glu Lys Phe Asp Pro Glu Ala Thr Gln Phe Ile
1795 1800 1805

Glu Tyr Ser Val Leu Ser Asp Phe Ala Asp Ala Leu Ser Glu Pro Leu
1810 1815 1820

Arg Ile Ala Lys Pro Asn Gln Ile Ser Leu Ile Asn Met Asp Leu Pro
1825 1830 1835 1840

Met Val Ser Gly Asp Arg Ile His Cys Met Asp Ile Leu Phe Ala Phe
1845 1850 1855

Thr Lys Arg Val Leu Gly Glu Ser Gly Glu Met Asp Ala Leu Lys Ile
1860 1865 1870

Gln Met Glu Glu Lys Phe Met Ala Ala Asn Pro Ser Lys Ile Ser Tyr
1875 1880 1885

Glu Pro Ile Thr Thr Leu Arg Arg Lys His Glu Glu Val Ser Ala
1890 1895 1900

Met Val Ile Gln Arg Ala Phe Arg Arg His Leu Leu Gln Arg Ser Leu
1905 1910 1915 1920

Lys His Ala Ser Phe Leu Phe Arg Gln Gln Ala Gly Ser Gly Leu Ser
1925 1930 1935

Glu Glu Asp Ala Pro Glu Arg Glu Gly Leu Ile Ala Tyr Val Met Ser
1940 1945 1950

Glu Asn Phe Ser Arg Pro Leu Gly Pro Pro Ser Ser Ser Ile Ser
1955 1960 1965

Ser Thr Ser Phe Pro Pro Ser Tyr Asp Ser Val Thr Arg Ala Thr Ser
1970 1975 1980

Asp Asn Leu Gln Val Arg Gly Ser Asp Tyr Ser His Ser Glu Asp Leu
1985 1990 1995 2000

Ala Asp Phe Pro Pro Ser Pro Asp Arg Asp Arg Glu Ser Ile Val
2005 2010 2015

<210> 3
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 3
gatgagaaga tggcaaactt cc 22

<210> 4
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 4
gctctggatc cccgggggtg cc 22

<210> 5
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 5
cacccccggg gatccagagc 20

<210> 6
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 6
ttcagtgtgt cctggccag 19

<210> 7
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 7
ttcctcatcg tggtaacct gtacattgcc atc 33

<210> 8
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 8
ggagatgatg atgttagtgtt 20

<210> 9
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 9
cgagagccac cgcgcatcac tgctg 25

<210> 10
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer

<400> 10
ctctcccccg ctgtgctgtt ttc 23